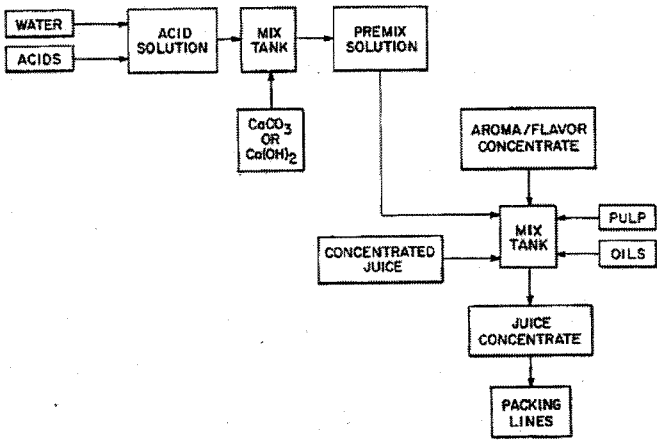
# Markman Brief Part Two




The patent later discusses an alternative approach where "the acids and calcium carbonate can be directly ***added*** to a concentrated fruit juice stripped of aroma and flavor volatiles." *Id.* at col. 11, lns. 11-13 (emphasis added). Under each approach described in the patent, however, the acid component in the final beverage comprises a mixture of acids that has been ***added*** to the base juice in some fashion.

At no place in the patent does the specification ever refer to any acids in the base juice alone as the sole "acid component," ever refer to the base juice acids alone as the claimed acid component's "mixture of citric acid and malic acid," or disclose or describe a beverage composition according to the claimed invention that relies solely upon the natural acids in the base juice to solubilize the calcium and provide desirable taste properties. Although the patent specification does state once early on that "[o]range juice naturally contains a mixture of citric acid and malic acid," *id.* at col. 2, lns. 16-18, that statement was made not in the context of the ***claimed*** invention, but appears only in the technical background of the invention and then solely in the context of the prior art's ***inability*** to effectively solubilize calcium through direct addition. As noted below, such a statement is in actuality a disclaimer of claim coverage for an acid component of the base juice alone.

After providing a functional definition of "acid component" in column 5, the '847 patent specification goes on in the next column to discuss "[t]he ***level*** at which the acid component" may be present in the claimed beverage, and defines such an acid component ***level*** as "total acids." *Id.* at col. 6, lns. 1-2 (emphasis added). The specification then states that, "[f]or the purposes of the present invention, 'total acids' include those naturally present, ***plus*** any acids ***added***." *Id.* at col. 6, lns. 4-6 (parentheses omitted).

The use of the word "plus" in this sentence is clearly conjunctive, not disjunctive. The quoted language is significant because, consistent with the entire disclosure and all illustrative examples, it contemplates the discrete ***addition*** of acids to the base juice, not merely permitting them to be present in the resulting beverage because they were ***already*** naturally present in the particular base juice selected. Indeed, prior to that portion of the specification, there had not been any suggestion in the patent that natural juice acids were themselves even part of the claimed acid component. Just the opposite, as the use of "acid component" earlier in column 4 expressly referred to the acids added to the base juice. *Id.* at col. 4, lns. 7-11. The reader is thus made to understand that "total acids" means the level of acids naturally found in the base juice, the ***added*** "mixture of citric acid and malic acid" (aka "Acids" depicted in the Figure), and any other optional edible acids (*id.* at col. 5, lns. 63-66) that are added to the base juice.

Thereafter, the '847 patent specification uses the phrase "total acids" in two different contexts. In example A (Orange Nectar Concentrate), the specification refers to a "total acids to calcium weight ratio of 5.3" for the "premix solution." *Id.* at col. 11, lns. 58-59. The specification, however, thereafter refers to a "total acids to calcium weight ratio of 10" for the "resulting calcium-supplemented orange concentrate nectar." *Id.* at col. 11, lns. 63-66. (It similarly reports the citric acid:malic acid weight ratios for both the premix solution and the

resulting nectar.) Example B (Orange Juice Concentrate) likewise uses the term "total acids" separately in reference to the premix and the resulting calcium-supplemented orange juice concentrate. *Id.* at col. 12, lns. 18-31. When "total acids" is used with reference to the resulting calcium-supplemented fruit juice concentrate, it consistently refers to the ***addition*** of acids to the acids that are present in the base juice concentrate. ***The phrase "total acids" is never used with reference to the acids present in the base juice alone***.

It is simply not possible to adopt a rational, supportable definition of either "acid component" or "total acids" that somehow omits the added acids that are the key to solubilizing the calcium and imparting desirable taste properties. Indeed, as discussed in detail below, P&G disparaged any reliance solely upon the acid system found in the base juice alone. Moreover, P&G's use of the term "mixture" throughout the patent specification and during patent prosecution likewise confirms that the claimed beverage requires the presence of ***added acids***, preferably in the premix solution used to initially solubilize the calcium and to provide desirable taste properties. *Cf. Abbott Labs. v. Novopharm Ltd.*, 323 F.3d 1324, 1329-30 (Fed. Cir. 2003) (construing claim term "mixture" in accordance with the way the term was used in examples provided in the specification).[6]

[6] Coca-Cola is aware that the case law has construed the claim term "mixture" in a variety of ways. *See, e.g., PIN/NIP, Inc. v. Platte Chem.Co.*, 304 F.3d 1235, 1244-45 (Fed. Cir. 2002); *Exxon Chem. Pats., Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1558 (Fed. Cir. 1995). However, as the nature of the invention and the intrinsic record is different in each case, the legal meaning of the term "mixture" must be determined on a case-by-case basis by reading the claim as a whole in the context of the patent specification viewed in its entirety.

### B. P&G Disparaged and Disclaimed the Direct Calcium-Supplemented Beverage Utilizing Only Naturally-Occurring Base Juice Acids and Represented that the Natural Acids Inhibit Solubilization

Although the '847 patent discloses the benefits of calcium-fortified juice, the patent notes at the outset that it was well-recognized that it was difficult to solubilize calcium in juice at the level typically present in milk. Exh. 1 at col. 1, lns. 57-62. This can be "a very significant problem because of the high level of calcium present" and "be difficult due to the ***acid systems*** and other components ***present in the juice***." *Id.* at col. 2, lns. 12-16 (emphasis added). "The most thermodynamically stable calcium citrate species which form when a calcium source is directly added to orange juice are also the most insoluble" and they "precipitate out of the orange juice fairly rapidly." *Id.* at col. 2, lns. 18-22. Thus, P&G discloses that the naturally occurring juice acids actually inhibit effective levels of calcium solubilization. Its invention is intended to overcome this problem. The claim language should not be construed to read on merely the source of the identified problem and not the solution to that problem.

Moreover, the "[n]utritional supplementation of orange juice, or other fruit juices, with significant levels of calcium is not straight forward." *Id.* at col. 1, lns. 57-59. One reason is that, by itself, the "direct addition of calcium sources . . . can generate undesirable cooked/browned off-flavors or cause desirable aroma and flavor compounds to be stripped from the juice." *Id.* at col. 1, ln. 65. to col. 2, ln. 1; *see also id.* at col. 11, lns. 17-22. Calcium salt addition "can impart undesirable brackishness to the juice;" "[c]alcium chloride addition has also been found to reduce the flavor intensity and quality, as well as the sweetness of orange juice." *Id.* at col. 2, lns. 3-6. Its invention was intended to overcome these undesirable taste problems as well.

In *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1341 (Fed. Cir. 2001), the Federal Circuit held that "[w]here the specification makes clear that the invention does not include a particular feature, that feature is deemed to be outside the reach of

the claims of the patent, even though the language of the claims, read without reference to the specification, might be considered broad enough to encompass the feature in question." In finding an implicit disclaimer of claim coverage, the Federal Circuit in *SciMed* relied upon the fact that the patentee had distinguished in the specification a dual lumen configuration used in the prior art as having disadvantages that the co-axial lumens used in the patented invention had overcome. *Id.* at 1344.

As noted above, the '847 patent specification makes clear that the functional purpose of using a discretely added acid component in the form of a mixture of citric acid and malic acid was key to effectively solubilizing the calcium and providing desirable taste properties.[7] P&G unequivocally distinguished its claimed calcium-supplemented fruit juice beverage that included ***added acids*** from prior art beverages that it asserted were disadvantageous because, when milk-level calcium was directly added to the fruit juice by itself, the acid system of the base juice alone impeded the full solubilization of such amounts of calcium and was unable to impart desirable taste properties to the resulting beverage. As discussed below, P&G continued to disclaim reliance on the natural acid system of the base juice in patent prosecution in order to gain allowance of the patent claims over the cited prior art.

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7 *See also J & M Corp. v. Harley-Davidson, Inc.*, 269 F.3d 1360, 1368 (Fed. Cir. 2001) (The specification's discussion of why the use of single clamp prior art structure was flawed and created problems as compared to the invention's use of two clamps operated as a disclaimer of claim scope to cover a single clamp structure.); *Cultor Corp. v. A.E. Staley Mfg.*, 224 F.3d 1328, 1331 (Fed. Cir. 2000) (relying on inventor's specification statement that the purpose of the invention was to remove the bitter taste from a polydextrose composition caused by citric acid used in its creation in finding a disclaimer of claim coverage for other prior art polydextrose compositions not made in the presence of citric acid).

### C. P&G Only Discloses Calcium-Supplemented Beverages Where Solubilization of Calcium Is Achieved with the Addition of Added Acids to the Base Juice

P&G's proposed solution to the above problems was to ***add a mixture of citric acid and malic acid*** to the base juice to promote calcium solubilization, whether by adding these acids directly to the base juice along with the added calcium and mixing the resulting juice carefully to avoid such problems or, preferably, by ***adding*** a premix solution containing highly soluble calcium ***citrate and malate species*** to the base juice. *See, e.g.*, Exh. 1 at col. 11, lns. 11-14 and 27-30. In fact, the ***only*** disclosed calcium-supplemented beverages in the '847 patent within the scope of the claims are those with fruit juice materials mixed with ***added acids***.

With the exception of one paragraph in the specification discussed below, all such disclosed beverages have fruit juice materials ***combined*** with "an at least meta-stable aqueous premix solution of solubilized calcium" formed from water, an acid component comprising citric acid and malic acid, and a calcium source selected from calcium carbonate, calcium oxide, and calcium hydroxide. *Compare* Exh. 1 at col. 4, lns. 7-14, *with* col. 11, ln. 32, to col. 13, ln. 13; *see also id.* at col. 9, ln. 46 to col. 10, ln. 3. This combination purports to "solve[] several significant problems which can be caused by direct addition of calcium sources [alone] to fruit juices or fruit juice concentrates." *Id.* at col. 4, lns. 20-23. The disclosed combination thus "***insur[es] solubilization of substantial levels of calcium*** in the juice or juice concentrate," "avoid[s] generation of cooked/brown off-flavors or the inclusion of undesirable species such as chloride ions," and "also permits the removal of carbon dioxide generated by the reaction of calcium carbonate with the acids so that undesirable carbonation of the juice does not occur." *Id.* at col. 4, lns. 23-30 (emphasis added).

As set forth at Subheading D of P&G's Disclosure Of The Invention and shown in the FIGURE, this method involves (1) dissolving citric and malic acid in an appropriate quantity of

water; (2) adding a source of calcium such as calcium carbonate to form a "premix" containing an at least meta-stable solution of solubilized calcium; and (3) ***combining*** the premix solution with concentrate juice, juice aroma and flavor volatiles, and other juice materials like pulp and peel oils in a ***mix tank***. *See id.* at col. 8, ln. 6, to col. 11, ln. 8. This latter step thus creates the mixture of ***added acids*** with the acids in the base concentrate juice.

For example, a calcium-supplemented (0.56% calcium) 42° Brix orange juice concentrate was prepared "by ***combining*** 65 parts ***concentrated orange juice*** (65° Brix)" and other materials with "14.6 parts of a premix solution obtained by combining 1.4 parts calcium carbonate, 2.2 parts of a ***mixture of citric and malic acid***, 10 parts water and 1 part concentrated orange juice (42° Brix)." *Id.* at col. 9, ln. 65, to col. 10, ln. 3 (emphasis added). The resulting calcium-supplemented orange juice concentrate thus contained a mixture of discretely ***added acids*** to the acids naturally occurring in the base concentrated orange juice.

In fact, every specific illustration of a calcium-supplemented fruit juice beverage disclosed in the '847 patent contains the acids naturally present in the base juice ***combined*** with a mixture of citric acid and malic acid that had been ***discretely added*** to the base juice. All of the disclosed examples employ the use of a premix solution initially prepared with calcium carbonate solubilized in a mixture of citric acid, malic acid, and water as the particular means of adding the acids to the fruit juice materials to create the resultant calcium-supplemented fruit juice beverages and juice concentrates. *See id.* at col. 11, ln. 32, to col. 13, ln. 13.

As aforenoted, the '847 patent specification does contain a single paragraph where the inventor nakedly asserts that the "[c]alcium-supplemented fruit juice beverages and juice concentrates of the present invention can be prepared by other methods" such as, "[f]or example, ***the acids*** and calcium carbonate can be ***directly added*** to a concentrated fruit juice stripped of

aroma and flavor volatiles." *Id.* at col. 11, lns. 9-13 (emphasis added). However, because of problems in mixing "to insure solubilization of the calcium," the risk of "undesirable foaming and loss of volatile flavor compounds in the juice" if the mixing is not done carefully, the risk of generating "cooked/brow[n]ed off-flavors due to the reaction and/or interactions of flavor components," and the fact that there is "residual carbonation" when the "calcium carbonate (alone or with citric acid) is directly added to the juice," the specification states that "the use of the ***premix solution of solubilized calcium*** is the ***preferred*** method for preparing calcium-supplemented fruit juice beverages and juice concentrates of the present invention." *Id.* at col. 11, lns. 13-30 (emphasis added).

No specific embodiment actually made by any alleged alternative method is disclosed in the '847 patent. Nor is there a disclosure of how to solve the anticipated problems. Notably, the sole alternative method that is described in only these general terms still ***requires the addition of discrete acids to the base juice acids to facilitate solubilization***, consistent with Coca-Cola's construction of the claims.

## VI. THE PROSECUTION HISTORY OF THE '847 PATENT CONFIRMS THAT THE CLAIMED BEVERAGE REQUIRES ADDED ACIDS TO SOLUBILIZE THE CALCIUM AND TO PROVIDE DESIRABLE TASTE PROPERTIES

A review of the prosecution history of the '847 patent confirms that Coca-Cola's interpretation of the claims is the one understood by the patent examiner and advocated by P&G in order to obtain allowance of its claims over the prior art. As discussed in detail below, P&G consistently distinguished all compositions that were not made with the addition of acids. In particular, P&G disparaged and disclaimed ***direct*** calcium-supplemented fruit juice beverages that utilized only the acids found in the base juice to solubilize the added calcium.

### A. Brief Overview of the Prosecution History

The application giving rise to the '847 patent was filed with the PTO on May 7, 1986. *See* Exh. 1. In an office action dated December 10, 1986, the examiner rejected claims 1-18 (the composition claims) and claims 19-27 (the method claims) for obviousness. Exh. 2 at 2-4. Among the references relied upon were Sperti et al., Exh. 3, and Kaji et al. Exh. 4.

The inventor Heckert, his attorney, and another P&G employee, Mr. Dake, had an interview with several examiners on March 2, 1987, during which demonstrations of the composition made by the premix method was compared with compositions made with the direct addition of calcium. Exh. 5. A couple of months later, P&G filed an amendment with the PTO. Exh. 8. This amendment corrected certain mistakes in the specification and in one claim, added a new method claim 29, and contained remarks and argument about the March interview and the patentability of the claimed inventions over the cited prior art. Accompanying the amendment was a declaration by Mr. Dake that described and explained the substance of the March interview demonstrations. Exh. 7.

As a result of the amendment, the Examiner allowed composition claims 1-18. Exh. 9 at 1, 4. P&G thereafter cancelled claims 19-29 without prejudice, Exh. 10 at 1, and claims 1-18 proceeded to allowance. Exh. 11.

The application giving rise to U.S. Patent No. 4,919,963 (the '963 patent) was a continuation of the application that gave rise to the '847 patent. Exh. 13. The '963 patent contains, in an amended form, the method claims originally found in the '847 patent application.

### B. P&G Consistently Disparaged Direct Addition of Calcium Approaches that Did Not Employ the Use of Added Acids During Prosecution Consistent with Its Disclaimer of Such Approaches in the Patent

According to the Examiner Interview Summary Record, demonstrations were conducted during the course of the March 1987 interview that "[c]ompared pre-mix procedure with various

procedures of direct addition." Exh. 5. The examiner noted that "[p]re-mix procedure appears to be preferred or ***only workable*** procedure comparing [sic: compared to] direct addition." *Id.* (emphasis added).

The subsequently filed Dake declaration described in detail P&G's claimed beverage compositions made by the demonstrated pre-mix procedure. *See* Exh. 7 at ¶¶ 3-5. According to the premix method used, "***[c]itric and malic acid*** were ***added*** to the water and mixed in a blend tank until dissolved," calcium carbonate and liquid sucrose were added to "provide the premix solution," and the premix solution was "***add[ed] and mix[ed] together . . . in a blend tank***" with concentrated juice, aqueous essences, citrus oils, citrus pulp, color, vitamins, and water. Exh. 7 at ¶ 5 (emphasis added). The Dake declaration contains no reference to any other type of beverage made under the '847 patent without a mixture of added citric and malic acids with the natural acids of the base juice.

Mr. Dake's declaration goes on to state that he "conducted demonstrations to show the problems caused by direct addition of calcium hydroxide [without added acids] . . . to orange juice or to orange juice concentrate." Exh. 7 at ¶ 6. In his first demonstration, Mr. Dake "found it very difficult to dissolve the calcium hydroxide in the juice, even with vigorous hand stirring." Exh. 7 at ¶ 7. The orange juice color "significantly darkened after calcium hydroxide addition," becoming "green in color" and "slowly develop[ed] a fishy, amine odor." *Id.* A second demonstration designed to double the calcium supplementation of the orange juice also encountered difficulty in dissolving the calcium hydroxide, and resulted in a darkened orange juice color, with a gel forming out of the juice, and a fishy, amine odor quickly developing. *Id.* These demonstrations were said to be "representative of what occurs during the direct addition of

calcium hydroxide to orange juice or orange juice concentrate in a large blend tank typically used in commercial citrus juice operations." *Id.*

P&G's attorney also submitted an outline to the examiners at the time of the interview, Exh. 6, the "first two pages" of which "were discussed" with the examiners. Exh. 5. The "[o]bjective" of the invention was said to "supplement ***products*** containing at least 45% juice with high levels of calcium (0.05 to 0.26%, preferably 0.10 to 0.15%)." Exh. 6 at 1 (emphasis added). P&G's interview outline noted that problems attempted to be solved by the claimed invention were the "solubilization of calcium" and avoiding "(a) deterioration of juice quality; (b) addition of unpleasant tasting materials; (c) removal of desirable juice volatiles; and (d) other processing problems (*e.g.*, foaming)." Exh. 6 at 1. In particular, via a "[d]emonstration," it was shown that the "direct addition" of calcium hydroxide alone to juice/concentrate without the use of added acids had the potential problems of (1) "very poor calcium solubility in juice/concentrate;" (2) "undesirable color generation;" (3) "undesirable amine odors;" and (4) "gelling of product." *Id.* at 2. P&G's "Premix Method" was said to achieve the objective of imparting the claimed level of calcium to the juice while solving these problems. *Id.* at 1.

P&G's remarks accompanying its amendment discussed both the product claims and the then-pending method claims. It is nonetheless clear that P&G intended any remarks made in connection with the method claims to apply to the product claims as well. For example, the first heading in P&G's remarks is entitled "The Calcium-Supplemented Juice ***Products*** of the Present Invention." Exh. 8 at 2 (emphasis added). The immediately following section, in which the demonstrations conducted with the examiners are principally discussed, is entitled "The Premix Method of the Present Invention ***Provides These Calcium-Supplemented Juice Products***, but Without the Problems Caused by Direct Addition of Calcium Sources to Juice or Juice